

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

To:
BERESKIN & PARR
P.O. Box 401
40 King Street West
TORONTO, Ontario
Canada, M5H 3Y2

PCT

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY

(PCT Rule 43bis.1)

Date of mailing (day/month/year) 21 March 2005 (21-03-2005)

Applicant's or agent's file reference
1161-562

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/CA2004/002097

International filing date (day/month/year)
09 December 2004 (09-12-2004)

Priority date (day/month/year)
09 December 2003 (09-12-2003)

International Patent Classification (IPC) or both national classification and IPC
H02K 1/06 , H02K 21/10

Applicant
ELECTROTECHNOLOGIES SELEM, INC. ET AL

1. This opinion contains indications relating to the following items :

- | | | | |
|-------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| <input checked="" type="checkbox"/> [X] | Box No. I | Basis of the opinion | |
| <input type="checkbox"/> [] | Box No. II | Priority | |
| <input type="checkbox"/> [] | Box No. III | Non-establishment of opinion with regard to novelty, inventive step and industrial applicability | |
| <input type="checkbox"/> [] | Box No. IV | Lack of unity of invention | |
| <input checked="" type="checkbox"/> [X] | Box No. V | Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement. | |
| <input type="checkbox"/> [] | Box No. VI | Certain documents cited | FILE NO. <u>2809. 2 PCT</u> |
| <input type="checkbox"/> [] | Box No. VII | Certain defects in the international application | ATTORNEY <u>FAD</u> |
| <input checked="" type="checkbox"/> [X] | Box No. VIII | Certain observations on the international application | DUE DATE <u>10/9/05</u> |
| | | | DOCKETED <u>VMG 3/30/05</u> |

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA") except that this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of 3 months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

"Resp" dd' Oct. 9/05

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA/CA
Canadian Intellectual Property Office
Place du Portage I, C114 - 1st Floor, Box PCT
50 Victoria Street
Gatineau, Quebec K1A 0C9

Facsimile No: 001(819)953-2476

Authorized officer

Avneet Singh Sahni (819) 934-4551

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/CA2004/002097

Box No. I

Basis of this opinion

1. With regard to the language, this opinion has been established on the basis of the international application in the language which it was filed, unless otherwise indicated under this item.

☐ This opinion has been established on the basis of a translation from the original language into the following language _____, which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).

2. With regard to any nucleotide and/or amino acid sequence disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of :

a. type of material

☐ a sequence listing

☐ table(s) related to the sequence listing

b. format of material

☐ in written format

☐ in computer readable form

c. time of filing/furnishing

☐ contained in the international application as filed.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority for the purposes of search.

3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statement that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.

4. Additional comments :

WRITTEN OPINION OF THE
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Box No. V Reasoned statement under Rule 43bis.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-14	YES
	Claims	none	NO
Inventive step (IS)	Claims	none	YES
	Claims	1-14	NO
Industrial applicability (IA)	Claims	1-14	YES
	Claims	none	NO

2. Citations and explanations :

Reference is made to the following documents:

D1: WO0131766 (Gianni et al.) 3 May 2001 (03-05-2001)
D2: US 5,955,810 (Umeda et al.) 21 Sep. 1999 (21-09-1999)

Re: Claim 1:

Document D1 discloses (the references in parentheses applying to the cited document)

- a polyphase electrical machine (a polyphase transverse flux dc motor Pg 1 Lines 32-33)
- plurality of identical magnetic circuit components distributed in a direction of motion (plurality of magnetically permeable bridging cores disposed about the stator axis and located between said first and second stator pieces Pg 2 Lines 8-10)
- stator and rotor (stator mounted co-axially with rotor so as to provide at least one air gap Pg 1 Line 35-36)
- plurality of claws (plurality of circumferentially disposed claw poles projecting in an axial direction Pg 2 Lines 1-2)
- base of each claw is connected to a common yoke (disposed about the stator axis Pg 2 Lines 8-9)
- one or several coils wound on a base (stator windings disposed about each bridging core, each winding or a selected set of windings produce a flux in the air gap which rotates about the stator axis Pg 2 Lines 13-19)
- one or several coils have an axis perpendicular to the air-gap surface (the flux leaves the pole and crosses the motor air gap [segment d, Figure 3] radially into the physically most proximate permanent magnet Pg 7 Lines 23-28)

The prior art does not explicitly state that the claws are arranged in plurality of rows, but this is considered to be a design choice, which a person skilled in the art would be able to come up with on the claim date of this application. Thus Claim 1 lacks inventive step in view of D1.

Re: Claim 2:

- The prior art does not explicitly state the mathematical equations claimed, but they are considered to be characteristics that follow from Claim 1, which a person skilled in the art would be able to come up with on the claim date of this application.

Re: Claim 3:

Document D1 discloses (the references in parentheses applying to the cited document)

- magnetic circuit component made from a plurality of parts, including a row of claws (within bridging cores, each stator piece includes a number of stator poles i.e. claw poles Pg 5 Lines 17-21)

Re: Claim 4:

Document D1 discloses (the references in parentheses applying to the cited document)

- magnetic circuit component made from a plurality of parts (bridging cores may be formed in each stator piece which during assembly of the stator are brought together in series to complete the magnetic circuit Pg 6 Lines 23- Page 7 Line 2)

Continued in Supplemental Box

**WRITTEN OPINION OF THE
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Box No. VIII Certain observations in the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made :

- Drawings, Fig. 1A-6B, do not meet the requirements of PCT 11.13(e) since it is unclear as to which elements the reference lines point to.
- In claims 1-14, under PCT Rule 6.2(b), the technical features mentioned should be followed by reference signs related to those features.

Supplemental Box

In case the space in any of the preceding boxes is not sufficient.

Continuation of Box V

Re: Claim 5:

Document D1 discloses (the references in parentheses applying to the cited document)

- magnetic circuit component formed by pressing, molding, or machining (stator pieces can be formed by pressing a soft magnetic material powder Pg 9 Lines 1-8)

Re: Claim 8:

Document D1 discloses (the references in parentheses applying to the cited document)

- plurality of claws are slotted or grooved (See Fig 2A, stator poles (12) i.e. claw poles)

Re: Claim 9:

Document D1 discloses (the references in parentheses applying to the cited document)

- claws having surfaces adjacent to the air gap (producing flux in the air gap adjacent to claw poles Pg 2 Lines 13-19)

Re: Claim 11, 14:

Document D1 discloses (the references in parentheses applying to the cited document)

- components are stacked along their axis of rotation (bridging cores are symmetrically disposed about the axis of the stator Pg 5 Lines 22-26)

Re: Claim 12:

Document D2 discloses (the references in parentheses applying to the cited document)

- magnetic component including an integral cooling system (an alternator for a vehicle with a cooling medium Col 2 Lines 17-27)

Re: Claim 13:

Document D1 discloses (the references in parentheses applying to the cited document)

- stator armature associated with a rotor that is split in several parts along the direction of motion (a first stator piece and a second stator piece Pg 2 Lines 1-7)

Re: Claims 6,7,10:

The prior art on record fails to disclose a magnetic circuit component where the component is made at least in part from laminated magnetic material formed by punching or machining; where a top surface of each claw has a rectangular, triangular, or trapezoidal shape; where the bases of the claws possess rectangular, oval, or circular sections with rounded sides. But these are considered to be only a design implementation rather than an inventive step.

Conclusions:

ARTICLE 33(2) PCT - NOVELTY

The subject matter of claims 1 to 14 is considered novel in view of the prior art on record, thereby fulfilling the requirements of Article 33(2) PCT.

ARTICLE 33(3) PCT - INVENTIVE STEP

The subject matter of claims 1-11 and 13-14 do not involve an inventive step under Article 33(3) PCT in view of D1.
The subject matter of claim 12 does not involve an inventive step under Article 33(3) PCT in view of D1 and D2.

ARTICLE 33(4) PCT - INDUSTRIAL APPLICABILITY

The subject matter of claims 1 to 14 is considered to be industrially applicable, thus fulfilling the requirements of Article 33(4) PCT.